

C1 0.1 sec., the stars are optimally acquired while in the subsequent frame with relatively short exposure time, e.g. 0.0001 sec., the rim of the earth is acquired particularly accurately.

IN THE CLAIMS

Cancel claims 25-30.

Sub D2
C2
Claim 18 (amended) A combined earth-star sensor system for three-axis attitude determination of a satellite in space, said combined earth-star sensor system (1) comprising separate apertures with different directions of observation of earth and stars to receive light from the earth and stars, having respective levels of brightness and common image pickup devices (4) for the earth observation and the star observation including means for variable control of exposure time of earth and star observations by said common image pickup devices depending on the brightness of the earth and the stars being observed.

Sub D3
C3
Claim 20 (amended) The sensor system according to claim 18, comprising an optical arrangement (9) for star observation, an optical arrangement (10) for earth observation and a semitranslucent beam splitter (8) between said apertures and the optical arrangements for deviating laterally entering light from the earth and transmitting light from the observed star, to the image pickup devices (4).

Sub D4
C4
Claim 31 (Amended) A method for simultaneous orbit determination and attitude determination of a space vehicle, comprising:
simultaneously forming images of a star and the rim of the earth in one focal plane of a sensor system;
determining attitude of the star in said focal plane;
determining the rim of the earth by image processing;
determining rates of rotation of the sensor system from movement of the star image in the focal plane; and
calculating at least one of orbit and altitude of the space vehicle carrying the sensor system, wherein
exposure or integration time of the sensor system is alternately adapted to a difference in brightness of the light from the star and the earth.

C5
Claim 34 (amended) The method according to claim 31, comprising filtering a long-wave fraction of the light used for determining the rim of the earth.